UNREDACTED VERSION OF EXHIBIT 30 SOUGHT TO BE FILED UNDER SEAL

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To:	Bryan Salesky ▐▐▐▐▐▐▐▐▐▐
Sent:	Thu, 12 Mar 2015 14:13:25 -0700
Subject:	[Laser Dev] Electrical SVN quota crisis
Cc:	chauffeur-electrical ▐▐▐▐▐▐▐▐▐▐▐▐▐▐▐▐▐▐ Chauffeur Laser Development ▐▐▐▐▐▐▐▐▐▐

Current situation

We store electrical engineering data in an SVN repository hosted by ▐▐▐▐▐▐▐▐ - a service on its death bad with lights-out date and all. The skeleton crew which runs that service has grown increasingly unwilling to give us a hit of quota as the plug-pull date looms. We are now out of quota and nobody can commit new files.

Background

Our electrical data is all-binary. Most files are O(1MB), many frequently-used files are O(100MB). Our first system was to use Apache+SSL+WebDAV to host SVN on a Ganeti instance with Kerberos authentication. This worked well for almost two years until Kerberos was shut down as an authentication mechanism. We were told to use a web-based login, a non-starter. Instead we migrated to ▐▐▐▐▐▐▐▐, following the Loon team's lead.

Requirements

- Ample storage. Our files are binary and large, so we eat disk space. Starting quota should be about a terabyte.
- Access control with user multiple access.
- Checkout of a subdirectory of the tree without consuming the disk space of the entire branch. *(1)*
- Fast. *(2)*

Wishes

- Lock-before-modify for flagged files. As our files are binaries and cannot be merged, locking is highly desirable to avoid collisions. *(3)*
- Accessible off-corp for contractors and vendors.
- Access control using Google accounts.

Possible approaches

- SVN on Ganeti (again)
  - ○ Arbitrary amounts of disk quota
  - ○ Without Kerberos, we have to use ssh+SVN, which is very slow
  - ○ No off-corp access
- Git-on-Borg
  - ○ Arbitrary amounts of disk quota
  - ○ Off-corp possible, but looks like a pain
  - ○ No locking
  - ○ Forced checkout of the entire repository
- SVN on filer
  - ○ Fast-and-easy
  - ○ Small quota
  - ○ Users of filer are actively hunted and murdered in their sleep by corp IT, and they're trying to kill the service.
  - ○ No off-corp access
  - ○ No locking
- SVN on third-party virtual private server
  - ○ Fast-and-easy
  - ○ Arbitrary quota
  - ○ Allows SVN lock
  - ○ Accessible anywhere
  - ○ Another username and password to manage (doesn't tie in to Google accounts)
  - ○ Political problem (Google data is now stored by a third party)
- SVN on Google Cloud Engine

    ○ Probably the same as for third-party virtual private server
- Delete SVN history to push our quota consumption back to just the stored file size
  - ○ Super fast-and-easy
  - ○ Kicking the can down the road

Ideally we'd be allowed to store this data wherever we like - it's not code, it's not user data, it's pretty low-value - and thus get the freedom to use easy solutions that do everything we want. But getting that permission is well above my englevel. **Bryan:** this is where you get involved.

-Sasha

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